YEAR 2006

PROGRESS REPORT OF ACTIVITIES

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James E. "Bud" Smith Plant Materials Center - Knox City, Texas

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The USDA – Natural Resources Conservation Service (NRCS) James E. "Bud" Smith (JEBS) Plant Materials Center (PMC) located near Knox City, Texas, was established in 1965, and is one of 27 PMCs located throughout the United States. The center is responsible for developing conservation plants and cultural techniques for use within targeted Major Land Resource Areas (MLRA) in Texas, Oklahoma, Kansas, Colorado, and New Mexico.

The JEBS PMC serves all or portions of 136 counties in Texas that comprises parts of 25 MLRAs, and the area served in all or portions of 39 counties in southwestern Oklahoma comprising parts of thirteen MLRAs. The PMC also serves a portion of seven counties in southwestern Kansas including parts of four MLRAs, a portion of one county in the southeastern corner of Colorado comprises parts of three MLRAs, and a portion of seven counties in eastern New Mexico comprises parts of seven MLRAs.

The PMC is located approximately four and a half miles northwest of Knox City, Texas, in the Rolling Red Plains Land Resource Area.

The mission of the Plant Materials Program is to develop and transfer effective state-of-the-art plant science technology to meet customer and resource needs. Plant and technology development objectives of the PMC include:

- Erosion Control - wind and water
- Range and Pasture Improvement
- Wildlife Habitat Improvement
- Water Quality Improvement on Agricultural Land

Following are highlights of some of the activities of the PMC for 2006. Please contact the PMC personnel for more detailed information:

Forage Production, Nutritive Quality and Growth Pattern of Warm-Season Grasses under Varying Fertility (Growth Curve Study)

The PMC is evaluating the forage quality, growth pattern and response to fertility of several perennial warm-season grass species. Data from this project will support the following conservation practices and applications:

- Forage Suitability Group Descriptions
- National Soil Information System
- Ecological Site information System
- Prescribed Grazing
- Pasture and Hayland Planting
- Web Soil Survey
- Grazing Land and Spatial Analysis Tool
- Nutritional Balance Analyzer

The plant species used for this study are 'Alamo' switchgrass, 'Earl' big bluestem, 'Lometa' Indiangrass, 'Selection 75' kleingrass, 'San Marcos' eastern gamagrass, 9065018 switchgrass (upland selection), and "Haskell' sideoats grama. The experimental design is a randomized complete block with 3 replications. Monthly clippings will occur from April through November for the next three years. Data will be summarized monthly and analyzed statistically.

PMC staff planting the warm-season grass species for the growth curve study.

Plots irrigated in the spring to enhance establishment the first year for the growth curve study.

Inter Center Strain Trial (ICST)

The PMC is growing and evaluating 'Harrison' germplasm Florida paspalum, *Paspalum floridanum*, which is a select class plant release from the East Texas PMC near Nacogdoches, Texas. This planting is assisting in the determination of the area of adaptation and growth performance. When this study is complete the East Texas PMC is anticipating the release of this plant species as a cultivar. The cultivar release means that this testing supports and documents the heritability of traits, the superiority and /or performance as compared to other varieties, and the range of adaptation. This is a three-year ICST study, and is on its second year of evaluation at the PMC near Knox City, Texas.

<u>Calamovilfa gigantea</u> Improvement Poly-Cross Nursery Breeding Project

The Manhattan, Kansas PMC has initiated a poly-cross nursery breeding project to genetically improve the germination and growth performance of giant sandreed. Giant sandreed is a native, perennial, warm-season grass which is valuable for stabilizing deep sands subject to severe wind erosion. The JEBS PMC included its own 9065015 giant sandreed, *Calamovilfa gigantea* in this project. Giant sandreed plants are evaluated and selected according to their ability to germinate, grow and persist in stressed environments. The best performing plants from accession 9065015 giant sandreed will be shipped to JEBS PMC to poly-cross, seed increase and evaluate for the potential as a new plant release in the near future.

Seed Production

The JEBS PMC maintains large scale foundation seed production of the following varieties:

- 'Haskell' sideoats grama
- 'Premier' sideoats grama
- 'Sabine' Illinois bundleflower
- 'Alamo' switchgrass
- 'Plateau' awnless bushsunflower
- 'Eldorado' Engelmanndaisy
- 'Lometa' Indiangrass
- 'San Marcos Germplasm' eastern gamagrass

Seed and information about these and others is available at the Texas Foundation Seed Service in Lockett, Texas. The website is http://tfss.tamu.edu or call at (940) 552-6226.

Third National Conference on Grazing Lands in St. Louis, Missouri

This conference was hosted by the Grazing Lands Conservation Initiative (GLCI) and the Society for Range Management (SRM). Morris J. Houck, Manager of the JEBS PMC, presented a technical paper at this conference on December 10-13, 2006. The paper was entitled *San Marcos Germplasm eastern gamagrass for forage use in north central Texas and southern Oklahoma.*

San Marcos Germplasm eastern gamagrass, [*Tripsacum dactyloides* (L.)L.] is a native, perennial, warm-season bunch-type grass with potential for forage use in north central Texas and southern Oklahoma. San Marcos Germplasm (evaluated as PI-434493), a tetraploid (2n=4x=72), was collected from a native stand near San Marcos, Texas, and released by the USDA - NRCS JEBS PMC in 2000. San Marcos Germplasm is a low-land type of eastern gamagrass that may be used in

pure stands for improved pasture, or included in a mix of other native grasses to enhance wildlife habitat. It may be produced successfully in areas receiving less than 28 inches of precipitation if grown under some type of irrigation system. San Marcos Germplasm eastern gamagrass could be useful in southern areas where 'Pete' and 'Iuka' are less vigorous. San Marcos Germplasm demonstrated higher yield and nutritive values for the north Texas area when compared to other southern ecotypes from East Texas, Arkansas, Mississippi, and Florida. Studies show three-year, dry matter yield at 12,206 lb./acre compared to an average of 8,592 lb./acre for other southern ecotypes. Crude protein (CP) values ranged from six to 13 percent with typically the first harvest being the highest quality. Total digestible nutrients range from 50 to 58 percent.

James E. "Bud" Smith PMC Personnel

- Morris J. Houck, Jr. - Manager (Transferred to Louisiana as State Plant Materials Specialist on September 5, 2006)
- Rudy G. Esquivel - Soil Conservationist
- Ronald L. Curd – Biological Science Technician
- Mark S. Bennett - Biological Science Aid

Plant Materials Program Web site:

Plant-Materials.nrcs.usda.gov